

# THE USE OF A BUSINESS MODEL IN DESIGNING AND OPERATIONALIZING PROCESSES

*Anna Ujwary-Gil<sup>1</sup> and Natalia Potoczek<sup>2</sup>*

## **Abstract**

*The operationalization of a business model in particular areas requires the application of appropriate management concepts and methods. One of such concepts is Business Process Management (BPM), founded on an assumption of complex management of an organization aimed at providing value to customers. Simultaneously, designing a process-based organization calls for a proper understanding of the business model of an organization, its key elements and mutual relations appearing in the model. This paper demonstrates the relationships between a business model and process management, as well as the usefulness of the BPM concept in developing a business model.*

**Keywords:** *business model, business process management, BPM, value, customers, research, operationalization.*

## **1. Introduction**

Analyzing the growing interest in business models, we should notice that it has been accelerating at an unprecedented speed since the mid-1990s. If we compare this growth with the increasing interest in business models, commonly recognized as one of the key aspects of the operations of an organization (Figure 1)<sup>3</sup>, we will undoubtedly see that it is an intriguing result.

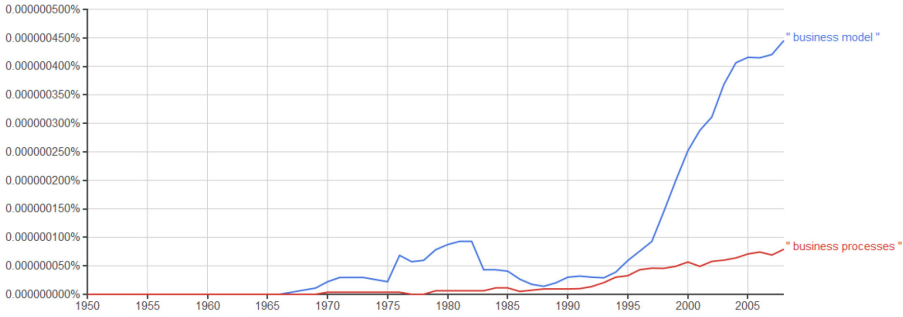
The “y” axis of the presented graph determines the percentage share of the key words: business model and business process in the total number of words in books published from 1950 to 2008.

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3 We used Google Ngram Viewer, which, thanks to the analytical capabilities of the software, allows us to trace the appearance of particular words in Google-indexed books, containing approximately 450 million language units. The drawback of this software is its limited time range (at present we can trace trends up to 2008) and the search limited only to books, excluding scientific journals and magazines.



**Figure 1.** Business model and business processes trends

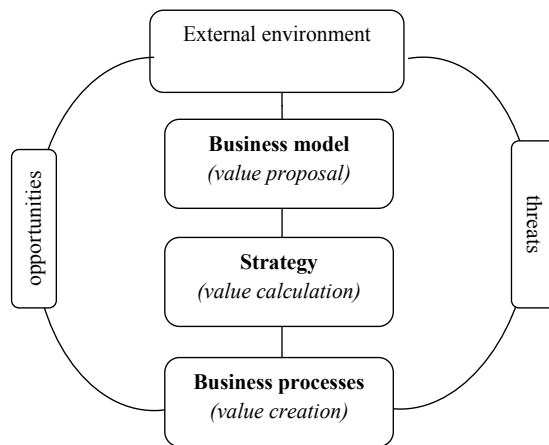
Source: Based on Google Ngram Viewer.

We may risk putting forward a thesis that business models fill a methodological gap in designing organizations and they might push the strategy to the operational level. In the classical presentation, the starting point in designing processes was the strategy of an organization, whose role in management has long come in for a lot of criticism. It should be noticed that in the perspective of the shortening production cycles in the economy, the strategy of an organization provides answers to the following questions: how to implement processes and what level of revenues and costs will allow us to accomplish our goals? These activities are performed on the degree of business analyses focusing mostly on process efficiencies, thus on the effectiveness of the operational activity of an enterprise.

However, in order to indicate which processes should be implemented in the long or short run, we need to take a broader look, bearing in mind the current dynamics of changes in the environment and customers' expectations. It is possible that business modeling is a more useful tool in developing innovativeness in an organization. The full understanding of the business model by employees facilitates the search for innovative solutions in providing customers with desired values through the implemented processes. These two concepts are interrelated, especially when we consider value generation, which plays a vital role in business models, designing and improving processes in an organization.

The article is divided into four sections. Apart from the introduction, the article presents elementary definition issues, the main methodological assumptions of the article and the business model and business processes of an organization selected for analysis; that is Library X. The article ends with conclusions and indication of further directions for research.

The primary goal of the article is thus to indicate the common elements and dependencies between the business model and process management of a selected organization. Both business model and business processes should be created taking into account opportunities and threats posed by the external environment of the organization (Figure 2). It is worth noticing that the analysis of opportunities and threats is performed in order to evaluate the business model and then to create a strategy for the organization. First, an idea of a venture must originate, followed by the calculation of the conditions for implementation, not the other way round. That may explain why business models have more to do with visionary work than a business strategy based on economic calculation. In search of innovations, business models generate by far better opportunities, since fewer barriers emerge when they are created (see e.g. Balboni & Bortoluzzi, 2015; Freiling, 2015; Günzel-Jensen & Holm, 2015; Harima & Vemuri, 2015; Jokela & Elo, 2015; Müller & Vorbach, 2015; Straker & Wrigley, 2015; Torkkeli, Salojärvi, Sainio & Saarenketo, 2015).



**Figure 2.** The diagram of the relations between the environment, the business model and the business processes

Business models cover the areas of analysis which should be conducted with reference to the organization's environment; that is opportunities and threats related to the value proposed to customers. However, for the needs of operationalizing the business model, it is necessary to develop or refer to methods which will allow us to relate to the relations between particular elements and consequences of revenues and costs.

## 2. Business model and business processes definitions

The business model is perceived through value creation for customers and in building a model directed at providing such value (Aspara, Lamberg, Laukia & Tikkanen, 2013; Chesbrough & Rosenbloom, 2002; Johnson, Christensen & Kagermann, 2008; Magretta, 2002; Morris, Schindehutte & Allen, 2005; Teece, 2010; Zott, Amit & Massa, 2011). It determines the details of a value proposal to stakeholders of an organization and the system of activities (processes) performed in order to create and deliver value to customers (Seddon, Lewis, Freeman & Shanks, 2004). Let us adopt, after Johnson (2008), that the business model is a value proposal for the customer, a profit formula, key resources and processes in the context of creating and delivering value to customers. On the other hand, we may assume after Zott and Amit (2010) that a business model is a new unit of analysis, a holistic perspective allowing us to determine how organizations conduct their activity, with emphasis placed on activities (processes) and value creation. The business model particularly stresses the measures of the value, its sources, value for a customer, value proposal and aspects related to the so-called network architecture (Kay, 1995) between an organization and external partners. The business model is also often defined in the context of conceptualizing ties between an organization and its stakeholders, especially customers (Baden-Fuller & Morgan, 2010) and concentrates on cooperation, partnership, joint creation of value, recognizing the interdependence of the performed activities as an essence of the business model (Zott & Amit, 2010).

Osterwalder and Pigneur (2010) propose the most complex business model canvas. They perceive the business model as an outline of the strategy which is to be implemented within the organization's framework, processes, and systems. The business model describes the premises behind the way in which an organization creates value, secures and draws profits from this created value (pp. 18-19). Among its nine key elements, the central position is occupied by the value proposal, which corresponds to the customers' needs, followed by:

- customer segments serviced by the organization,
- channels through which proposed values reach customers,
- relations which are shaped with particular segments of customers,
- revenue flows, which stem from the implementation of the value proposal,
- key resources, that is assets necessary to formulate and satisfy previous customers' needs,
- key activities are undertaken by the organization in order to create and deliver value to customers,
- key partners with whom the organization cooperates in order to gain value for customers,

- cost structure which indicates how particular elements in the Model generate costs.

Analyzing the activities undertaken by the organization to create and deliver value to customers we need to define the problem area of this element of the model. Actions are taken in a determined organizational configuration. For over two decades the process approach has dominated the economic ventures in the organization. The process approach to organizational management dates back to the concepts of a production system described by Taylor at the beginning of the 20th century (1911). Organizational processes gained popularity with the emphasis on quality and statistical methods in management and with the appearance of the TQM (Total Quality Management) concept. In the past decade, the development of integrated IT systems of management has led to the development of process management concepts. At the beginning of the 21st century, a holistic concept of Business Process Management (BPM) originated, reflecting previous approaches, such as Business Process Reengineering (BPR), Enterprise Application Integration (EAI), or Workflow Management (WFM). The holistic evolution of the process approach has been noticed by, inter alia, Smith and Fingar (2003, 2007). At present, BPM approach is used in a wide context and it refers to enterprise organization, process architecture, methods, techniques, and tools – mostly IT ones, used for mapping, automating and improving processes. BPM now constitutes a holistic concept of organizational management based on the assumption that processes are a key mechanism for delivering value to customers, as well as to owners and other stakeholders. The assumption concerning the delivery of value to customers through processes goes well with the business model concept proposed by Osterwalder and Pigneur (2010), for whom key activities are aimed at creating and delivering value to customers.

One of more popular models used in designing processes is the SIPOC model (Suppliers, Inputs, Process, Outputs, Customers) presented by Pande, Neuman and Cavanagh (2003). The model assumes that a process is designed by determining the recipient's requirements and expectations, which constitute input data and define the goal which we try to accomplish. The output data shows whether the assumed level of customer satisfaction has been achieved or not. The total client-orientation in the process approach means that in operationalizing the business model in key activities, we should use the BPM concept.

### **3. Research questions and methodology**

The subject of the research is to identify the relations between the business model and process management, as well as the possibilities of using BPM

in operationalizing the model. The subject of the research is a university library which also provides its services outside the academic community. The choice of the library as an object of our research was intentional, related to the implementation of a research project (see footnote 1), which analyzes four case studies. One of them is the above-mentioned library.

First of all, the business model of the library was identified with the *business model canvas*, and then it was evaluated, taking into account the strengths and weaknesses of the library and the opportunities and threats provided by the environment. Then, on the basis of the identified principle activities and resources, a map of processes was developed, following the BPM approach, which differentiates core business processes and supplementary processes and their significance to the process management. It was demonstrated that process modeling is connected with creating value for customers, whereas the designed value chains aim at transforming resources in order to create and deliver value to customers.

BPM allows us to determine relations between processes and other process elements. To achieve this, we indicated the relations between processes, activities and resources. Tying these elements ensures better control of costs incurred in the implemented processes.

Bearing the above in mind, the following research problems were formulated:

- 1) What are the common elements and interdependencies between the business model and process management of the selected organization?
- 2) How does the use of the business model concept determine the operations of the organization?
- 3) How does the use of BPM support the operationalization of the business model?

The survey is based on the analysis of documents and questionnaires, which allowed us to interpret them and to come to certain conclusions.

#### **4. Business model and business processes of the selected organization**

##### *External environment: opportunities and threats*

Library X enjoys a good reputation in the community, associated with a high position of the University within which Library functions, not only in the national education and research market. There are a number of factors conducive to this, such as the growing importance of technical education observed in the past few years, the openness of University graduates as Library regular customers – they consolidate the trend of combining science and technology with an economy whose main resource is knowledge and its

use Moreover, efficient flow of information and access to the latest research results helps identify the gap in the commercialization of research results; finally promoting access to scientific research results in open access form. Also, the location of the Library is important – in the center of the country, favorable for all cooperation and being a leading unit providing high-quality services.

The position of the Library as a scientific and educational unit depends on the expenditure on its operations and development. Therefore, it is essential to obtain new library software of new generation – ALMA – and to gain and use the maximum amount of project means from Horizon 2020 program for investment and expanding the collection. The accomplishment of this goal is supported by the Act of 29th January 2004 – Public Procurement Law, which anew defines the university responsibility to purchase library materials following a simplified procedure which does not require that libraries should organize public tenders to buy the collection. Moreover, the Library as a didactic unit is exempted from paying VAT tax for equipping it with computer hardware and the latest software.

The Library's cooperation with international libraries offers a possibility of gaining knowledge on new trends, whereas its participation in the Europeana project gives it an opportunity to join the digital library of Europe. On the national level, cooperation with BIP MSW helps to share the collection; it is equally important to cooperate with faculty and institute libraries and to have stable relations with suppliers with barter exchange of benefits. The Library has benefited from numerous projects implemented within the Science Popularization Activities (SPA), aimed at improving the quality of services offered by the University Library and IT system, as well as better utilization of the collection.

The Library sees an opportunity for itself in transforming into a key scientific and research unit on the Master's degree level and in providing access to its resources from any place or computer. An important role is played by the regulators (for example Rector), who are open to initiatives and to the implementation of legal provisions while providing financial support. It is also considered whether services should be centralized as far as university administration is concerned, as it ensures efficient management.

There are also a lot of negative factors affecting the operations of the Library. They may be divided into macro and micro factors. On the macro level, these comprise the lack of firm policy of higher education sector development and the principles of financing it; legal regulations which deregulate the profession of a certified librarian and relatively low salaries in library professions; or the implementation of new regulations concerning Health and Safety. We should also mention the risk of concluding unfavorable

long-term contracts and high costs of purchasing the collections and the general equipment and exploitation. The biggest threats, however, are connected with financial risk, including: ceasing the financing of national licenses for access to basic scientific information sources; threatening financial liquidity and inability to meet obligations or changes to the system of financing the Library. On the micro level, apart from financial threats, there is a risk of possessing equipment and software that does not meet the minimum technical requirements, the partitioning of the Library and its dispersion, decentralization of the library and IT system as well as internal conflicts among employees.

### *The business model*

In order to identify the Library business model, we used the concept of Osterwalder and Pigneur (2010) and then we characterized nine elements included in *business model canvas* (Table 1):

**Table 1.** The components of the Library business model

<b>Business model components</b>	<b>Attributes</b>
<b>Value proposal</b>	<ul style="list-style-type: none"> <li>- quick access to the collection and new items in a given field;</li> <li>- number of collections adequate to orders;</li> <li>- place where collections are available (distance, free access to the premises);</li> <li>- access to electronic resources;</li> <li>- ease of finding collections</li> <li>- well-stored works (visible all over the world)</li> <li>- information services;</li> <li>- regular notification on the deadline for the borrowed book;</li> <li>- efficient and regular contact with the library using forms: Ask the Librarian, Propose for the Collection;</li> <li>- home page of the Library;</li> <li>- access to the reading room 71 hours per week;</li> <li>- ensuring a place for quiet individual and team work.</li> </ul>
<b>Customer segments</b>	<ul style="list-style-type: none"> <li>- scientists, lecturers;</li> <li>- students;</li> <li>- hobbyists;</li> <li>- children, youth, senior citizens.</li> </ul>
<b>Distribution channels</b>	<ul style="list-style-type: none"> <li>- website;</li> <li>- system of visual information;</li> <li>- 4 Binfo monitors;</li> <li>- leaflets;</li> <li>- electronic mail;</li> <li>- messages passed at the Senate and Faculty meetings;</li> <li>- free access (reading room).</li> </ul>

<b>Business model components</b>	<b>Attributes</b>
<b>Customer relations</b>	<ul style="list-style-type: none"> <li>- personal;</li> <li>- automated relations (ordering via library website)</li> <li>- access to electronic resources via HAN system;</li> <li>- digitized relations (remote access, contact).</li> </ul>
<b>Partners</b>	<ul style="list-style-type: none"> <li>- Faculties;</li> <li>- University libraries;</li> <li>- other external libraries;</li> <li>- suppliers of collections.</li> </ul>
<b>Key resources</b>	<ul style="list-style-type: none"> <li>- human resources: competencies in library science, sciences, information science, information and communication technologies, marketing, negotiations, pedagogy, multimedia presentations;</li> <li>- tangible resources: rooms with equipment allowing the library, reading room, storage area and archive work, educational classes, equipment in the computer lab, office equipment (computer hardware);</li> <li>- intangible resources: software, integrated IT system, Aleph, Oracle, Omega-Psir, Zotero, ProShow, DLibra, Program Han, Java, Moodle, ReWorks, SAP, USOS, ZSB.</li> </ul>
<b>Key activities</b>	<ul style="list-style-type: none"> <li>- core processes: identifying the needs of library customers, gathering, developing, record-keeping library resources, informing and educating customers, sharing library resources;</li> <li>- support processes: personnel processes, financial and accounting processes, IT processes – LAN administration, technical maintenance.</li> </ul>
<b>Revenue flows</b>	<ul style="list-style-type: none"> <li>- university subsidies, a didactic subsidy from which general university subsidy is singled out (part from statutory research);</li> <li>- subsidy from Ministry of Science and Higher Education; SPA</li> <li>- income from providing services;</li> <li>- special fees for returning books past the deadline.</li> </ul>
<b>Cost structure</b>	<ul style="list-style-type: none"> <li>- salaries;</li> <li>- purchasing collections;</li> <li>- material and energy consumption;</li> <li>- depreciation;</li> <li>- internal services (costs of use, purchases from own publishing house).</li> </ul>

**Source:** Based on Ujwary-Gil (2016, pp. 919-920).

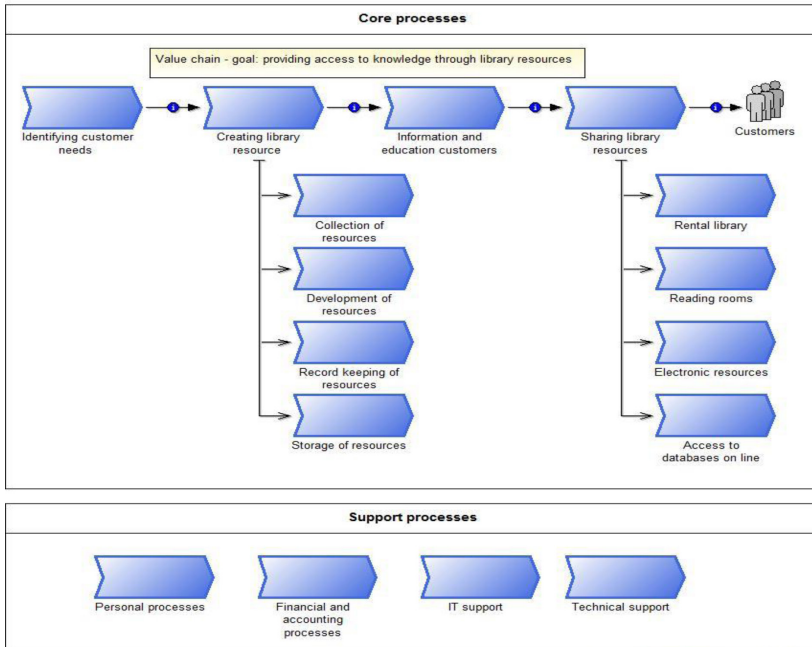
These elements of the business model concern not only the most important resources and key activities in the value chain of the organization, but also value proposal, customer relations, distribution channels, customer segments, cost structure and revenue sources – which allows us to compare a given model with other models existing in the market, in spite of different configurations of their constituting components.

## *Business processes*

Creating values proposed in the business model requires, among other things, appropriate designing, implementation, and realization of processes. Contemporary concepts of business process management significantly refer to the importance of the value provided for customers. Therefore the architecture of organizational processes is built on chains of value delivered to customers. The ultimate value is created during the appropriately configured processes and activities that are viable due to appropriate, skillfully provided tangible and intangible resources.

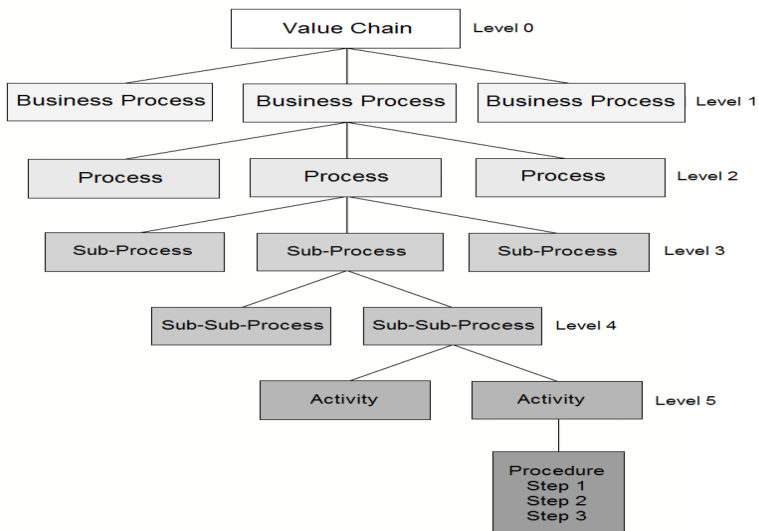
The question of how a particular value is to be created is a question about the core business processes of an organization and about support processes which help provide necessary resources and services. Business processes reflect a mutual influence of people, material resources, knowledge, and information (see Figure 3 and Table 2). They help us learn how value is created in an organization, especially as there are various stages in which a product or a service are created and delivered to a customer. The main value chain covers groups of processes where the effects achieved in some processes supply further processes so as to lead to the completion of resource transformation with the provision of values proposed in the business model (Table 1) to customers from particular segments. In each organization, the implementation of core business processes must be aided with support processes, which means that support processes also have their recipients – internal customers. Although the business model mostly covers external customers and activities aimed at creating and delivering values thanks to which revenue flows are generated, it must be remembered that the incurred costs must also take into account support processes and activities. In the bottom line, they will be essential for obtaining satisfactory levels of profits.

The above map (Figure 3) presents the main activities included in the business model divided into core and support processes. However, to identify the full scope of tasks performed in the Library, we would have to present the full hierarchy of process structure. Figure 3 presents the concept of a hierarchical presentation of the chain of values, processes, and sub-processes. Process identification is conducted on various levels, leading us to single tasks. Proper understanding and design of the processes allow us to increase our control over the organization of activities and incurred costs.



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**Figure 3.** The map of Library processes



**Figure 4.** A hierarchical decomposition of a value chain

Source: Harmon (2007, p. 81) and Potoczek (2016, p. 119).

**Table 2.** Key activities of the Library included in the value chain

<b>Value chain: ensuring access to knowledge through library resources</b>			
<b>Core processes</b>	<b>Sub-processes/activities</b>	<b>Important human resources</b>	<b>Basic tangible and intangible resources</b>
1. Identifying the needs of library customers	Identifying the needs of particular segments.	Knowledge of education programs, KRK in sciences, library science, national and foreign publishing market.	Access to scientific bases, Pro Show, DLibra, Integrated Library System
2. Creating library resources	Gathering library resources. Developing resources. Record keeping of resources. Storing resources.	Knowledge of library science, information science, IT and marketing skills	Integrated IT System, Aleph, Oracle, financial means for purchasing collections, server, terminals, PCs, rooms and library equipment for office and didactic work.
3. Informing and educating customers	Creating the homepage. Creating a register of purchased items. Creating the visual information system. Developing promotional materials. Testing access and databases. Informing about collections. Providing answers to scientific research. Developing the education program in information education (KRK). Tailoring the program to the needs of University faculties. Trainings in methodology of research Trainings in e-learning.	Knowledge of Library science, Information science, Pedagogy, ability to service websites, ability to use graphic software, didactic skills, ability to prepare and deliver multimedia presentations.	Binfo, Aleph, ProShow, DLibra, Program Han, Java, Computer hardware, leaflets, information materials.
4. Providing access to library resources	Providing remote access to the electronic collections. Creating electronic versions of documents. Creating full-text bibliography. Creating board exhibitions.	Knowledge and skills of organizing work in the library. Ability to use computer techniques to service databases, library website, and to provide remote library services.	Library premises, electronic resources, access to scientific bases

The business model operationalization should entail relations between particular elements. Table 2 below presents important resources used at various stages of the value chain implementation. The use of the hierarchical decomposition of processes would allow us to determine precisely the resources necessary to accomplish particular processes, sub-processes, and final tasks.

Referring to the BPM concept for the purposes of business model implementation we gain the structured methodology of designing processes and managing them. Process management allows us to identify precisely the resources needed at all stages of process implementation and thus the costs incurred.

It is worth remembering that the management process should facilitate the organization of flexible response to changes in the environment. The relevant benchmark, in this case, is the dynamic model. An interesting example is the Szelański's concept (2014, pp. 151-152) for dynamic business process management (DBPM). The idea of DBPM is a practical solution for managing a learning organization. The concept is the basis for the implementation of process management according to three basic principles, which the author defines as:

- evolutionary changeability during the realization process,
- processes are considered completed only after having been documented,
- comprehensiveness and continuity. Because DBPM assumes variability, complexity and continuity of the process, the obvious consequence is permanent process improvement.

## **5. Conclusions**

The application of the business model in identifying the activities of the library is a useful tool. It does not allow us to identify the value proposal and the segments of customers to whom the value is directed, but also the conditions in which the library functions, obtains revenues and incurs costs. The article in the business model operationalization indicates that it is necessary to use the concepts and methods of organizing business ventures which also rely heavily on strong customer orientation and consequently, on creating values recognized by customers. The literature studies, followed by the identification of the Library business model and the preliminary identification of business processes and grouping them helped us arrive at conclusions concerning the adequacy and usefulness of the BPM concept for the needs of business model operationalization. The BPM concept allows us to plan activities, coherent

with the model assumptions, which will help us to create and deliver values to particular segments of customers.

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